

WHAT IS CLAIMED IS:

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1. A data recording clock signal generator
that generates a recording clock signal synchronous with
a wobble signal used for recording data on an optical
disk having a data recording track wobbled by the wobble
10 signal having predetermined frequency components,

said data recording clock generator
comprising:

a wobble signal extracting unit that extracts
the wobble signal;

15 a recording clock signal dividing unit that
generates a divided clock signal obtained by dividing
the frequency of the recording clock signal;

a phase difference signal generating unit that
generates a phase difference signal as a result of phase
20 comparison between the wobble signal and the divided
clock signal;

a frequency control signal generating unit
that generates a frequency control signal based on the
phase difference signal generated by the phase
25 difference signal generating unit; and

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a recording clock signal generating unit that generates the recording clock signal having a frequency controlled in accordance with the frequency control signal generated by the frequency control signal generator,

wherein

the recording clock signal dividing unit is provided with a frequency dividing rate setting unit that sets a reference frequency dividing rate by which the frequency of the recording clock signal is divided and a frequency dividing rate different from the reference frequency dividing rate, following predetermined procedures.

2. The data recording clock signal generator as claimed in claim 1, wherein

the frequency dividing rate setting unit is provided with a rate selecting unit that changes an order of combination of the reference frequency dividing rate and the different frequency dividing rate every time data recording is performed on the optical disk.

3. The data recording clock signal generator as claimed in claim 1, further comprising:

a synchronous detection unit that detects a synchronizing signal superimposed on the wobble signal;

5 a synchronous relationship judgment unit that judges the synchronous relationship between the detected synchronizing signal and recording data to be recorded on the optical disk; and

10 a control unit that controls an average value of the frequency dividing rate set in the recording clock dividing unit to be greater than the reference frequency dividing rate when the synchronous relationship judgment unit judges that the recording data lags behind the detected synchronizing signal, and
15 also controls the average value of the frequency dividing rate to be smaller than the reference frequency dividing rate when the synchronous relationship judgment unit judges that the recording data is ahead of the detected synchronizing signal.

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4. A data recording clock signal generator
25 that generates a recording clock signal synchronous with

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a wobble signal used for recording data on an optical disk having a data recording track wobbled by the wobble signal, which has predetermined frequency components, and on which address information and a synchronizing
5 signal are phase-modulated and superimposed,

said data recording clock signal generator comprises:

a wobble signal extracting unit that extracts the wobble signal;

10 a recording clock signal dividing unit that generates a divided clock signal obtained by dividing a frequency of the recording clock signal;

a phase difference signal generating unit that generates a phase difference signal as a result of a
15 phase comparison between the wobble signal and the divided clock signal;

a frequency control signal generating unit that generates a frequency control signal based on the phase difference signal generated by the phase
20 difference signal generating unit;

a recording clock signal generating unit that generates the recording clock signal having a frequency controlled in accordance with the frequency control signal generated by the frequency control signal
25 generating unit; and

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a masking unit that prevents the phase difference signal generating unit from generating the phase difference signal at any timing close to the timing when either the address information or the synchronizing signal is phase-modulated on the optical disk.

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5. A data recording clock signal generator that generates a recording clock signal synchronous with a wobble signal used for recording data on an optical disk having a data recording track wobbled by the wobble signal having predetermined frequency components,

said data recording clock signal generator comprising:

a wobble signal extracting unit that extracts the wobble signal;

a recording clock signal dividing unit that generates a divided clock signal obtained by dividing a frequency of the recording clock signal;

a phase difference signal generating unit that generates a phase difference signal as a result of a phase comparison between the wobble signal and the

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divided clock signal;

5 a first frequency control signal generating unit that generates a first frequency control signal based on the phase difference signal generated by the phase difference signal generating unit;

a wobble signal dividing unit that divides a frequency of the wobble signal at a predetermined frequency dividing rate;

10 a wobble signal cycle counting unit that counts cycles of the divided wobble signal by the cycle of the recording clock signal;

15 a second frequency control signal generating unit that generates a second frequency control signal based on the number of cycles counted by the wobble signal cycle counting unit; and

20 a recording clock signal generating unit that generates the recording clock signal having a frequency controlled in accordance with the first frequency control signal when the number of cycles counted by the wobble signal cycle counting unit is within a predetermined range, and generates the recording clock signal having a frequency controlled in accordance with the second frequency control signal when the number of cycles counted by the wobble signal cycle counting unit is outside the predetermined range.

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6. The data recording clock signal generator
as claimed in claim 5, wherein

the recording clock signal generating unit
generates the recording clock signal having the
5 frequency controlled in accordance with the first
frequency control signal when the number of cycles
counted by the wobble signal cycle counting unit is
within the predetermined range, and generates the
recording clock signal having the frequency controlled
10 in accordance with the second frequency control signal
when the number of cycles counted by the wobble signal
cycle counting unit is determined to be outside the
predetermined range a predetermined consecutive number
of times.

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